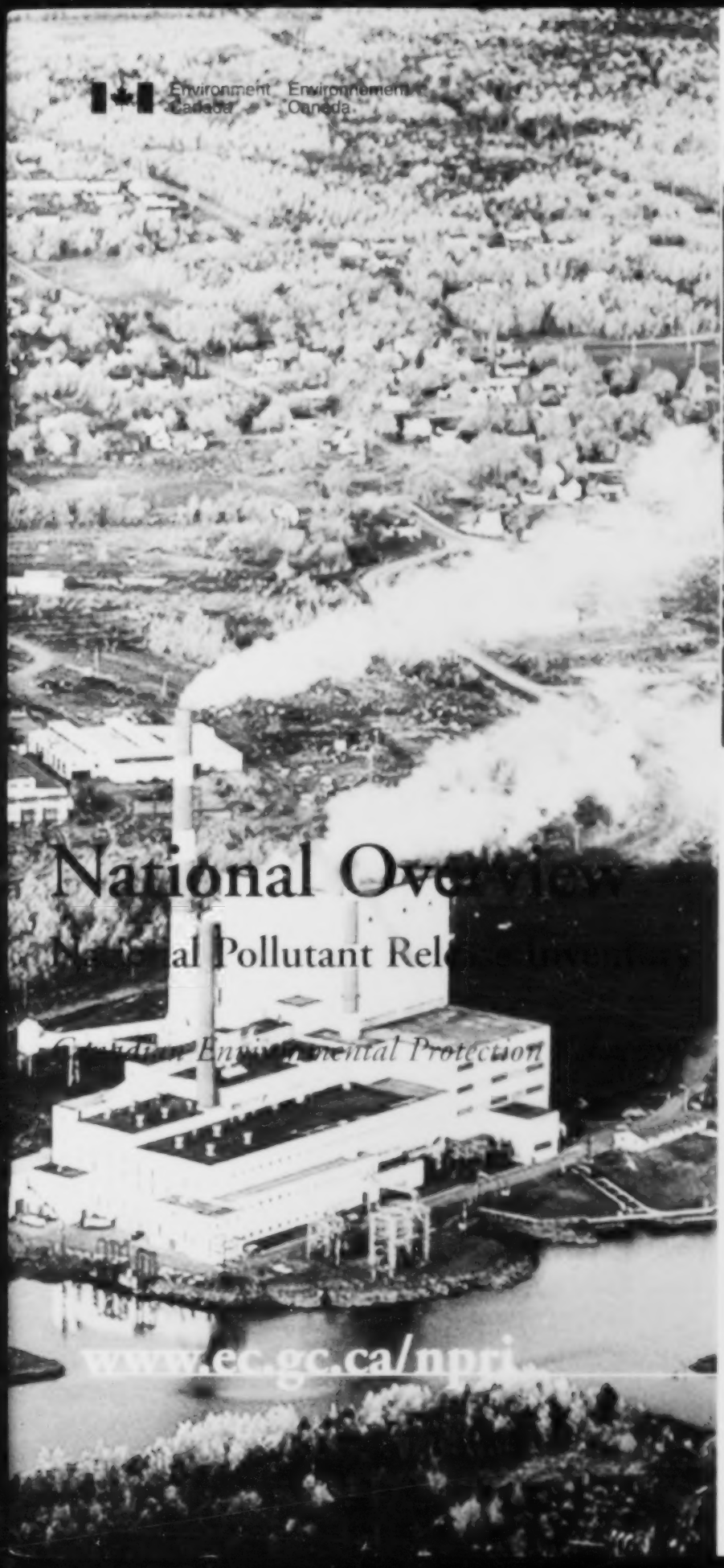


Environment Canada / Environnement Canada

National Ove[illegible]

[illegible]al Pollutant Rel[illegible] Inventory

Canadian Environmental Protection [illegible]

www.ec.gc.ca/npri

Final Disposal and Off-site Transfers for Treatment Prior to Final Disposal

Canada

National and Regional National Pollutant Release Inventory (NPRI) Offices

National Office
National Pollutant Release Inventory
Environment Canada
Place Vincent Massey, 9th Floor
351 St. Joseph Boulevard
Gatineau, QC
K1A 0H3
Tel: (819) 953-1656
Fax: (819) 994-3266
E-mail: NPRI@ec.gc.ca

Newfoundland and Labrador, Prince Edward Island, New Brunswick and Nova Scotia
National Pollutant Release Inventory
Environment Canada
Queen Square, 16th Floor
45 Alderney Drive
Dartmouth, NS
B2Y 2N6
Tel: (902) 426-4482 / 426-4805 / 426-5037
Fax: (902) 490-0722
E-mail: NPRI_ATL@ec.gc.ca

Quebec
National Pollutant Release Inventory
Environment Canada
105 McGill Street, 4th Floor
Montreal, QC
H2Y 2E7
Tel: (514) 283-7303 / 283-0248 / 496-1832
Fax: (514) 496-6982
E-mail: INRP_QC@ec.gc.ca

Ontario
National Pollutant Release Inventory
Environment Canada
4905 Dufferin Street, 2nd Floor
Downsview, ON
M3H 5T4
Tel: (416) 739-5955 / (416) 739-5894
Fax: (416) 739-4326
E-mail: NPRI_ONTARIO@ec.gc.ca

ISBN 0-662-37186-0
Catalogue No. En49-16/1-2002E

NPRI/ON MOE Reg.127
Joint Technical Assistance Centre
Tel: (416) 739-4707

Manitoba, Saskatchewan, Alberta, Northwest Territories and Nunavut
National Pollutant Release Inventory
Environment Canada
Twin Atria #2, Room 200
4999-98 Avenue
Edmonton, AB
T6B 2X3
Tel: (780) 951-8989
Fax: (780) 951-8808 / 495-2615
E-mail: NPRI_PNR@ec.gc.ca

British Columbia and Yukon
National Pollutant Release Inventory
Environment Canada
#201-401 Burrard Street
Vancouver, BC
V6C 3S5
Tel: (604) 666-3221 / 666-3890 / 666-9864
Fax: (604) 666-6800
E-mail: NPRI_PYR@ec.gc.ca

National Pollutant Release Inventory
Environment Canada
91782 Alaska Highway
Whitehorse, YT
Y1A 5B7
Tel: (867) 667-3402
Fax: (867) 667-7962
E-mail: NPRI_YK@ec.gc.ca

NPRI Software Help Desk
Tel: (819) 994-1672
E-mail: nprihelpdesk@ec.gc.ca

National Overview – 2002

National Pollutant Release Inventory

Final Disposal and Off-site Transfers for Treatment Prior to Final Disposal

Canadian Environmental Protection Act, 1999

Table of Contents

1 Introduction 1

2 Summary of On-site and Off-site Final Disposal in 2002 2

2.1 On-site Final Disposal in 2002 3

2.1.1 NPRI Pollutants Sent in Largest Quantities for On-site Final Disposal in 2002 4

2.1.2 Industrial Sectors Reporting the Largest On-site Final Disposals in 2002 4

2.2 Off-site Final Disposal in 2002 7

2.2.1 NPRI Pollutants Sent in Largest Quantities for Off-site Final Disposal in 2002 8

2.2.2 Industrial Sectors Reporting the Largest Off-site Final Disposals in 2002 8

3 Summary of Off-site Transfers for Treatment Prior to Final Disposal in 2002 11

3.1 25 NPRI Pollutants Sent in Largest Quantities for Off-site Treatment Prior to Final Disposal in 2002 13

3.2 Industrial Sectors Reporting the Largest Off-site Transfers for Treatment Prior to Final Disposal in 2002 13

4 References and Bibliography 20

4.1 Government of Canada 20

4.2 Web Sites for Substance Information 21

4.2.1 Environment Canada 21

4.2.2 Health Canada 21

4.2.3 International Links 21

4.3 Additional Sources of Information 22

Appendix A: Overview of the NPRI 23

Appendix B: Detailed Data Elements Reported to the NPRI 26

105-03163/

1. Introduction

The National Pollutant Release Inventory (NPRI) is at the centre of the Government of Canada's efforts to track toxic substances. It is a legislated inventory of pollutants released to the environment. The NPRI was established in 1992 to inform Canadians about releases of pollutants in their communities, including the amounts discharged to the air, water and land and by underground injection and the amounts sent to other facilities for disposal, treatment or recycling and energy recovery. The NPRI is constantly evolving. Since it was established, substances have been added and deleted, the thresholds at which substances are reported have been adjusted, and the scope of the inventory has been expanded to collect data on recycling and pollution prevention. Further refinements are planned for future years. Please refer to **Appendix A** for information on:

- what is new for the 2002 NPRI,
- the NPRI substance list for 2002,
- the 2002 National Overview Series, and
- new groupings for releases and transfers.

See **Appendix B** for definitions of releases, disposals and transfers.

In 2002, criteria air contaminants (CAC) were added to the NPRI for the first time. As a result, the number of NPRI substance reports in the 2002 NPRI has almost doubled compared to 2001. For the purpose of comparing the 2002 data with those submitted in 2001, the information collected on CAC for 2002 are summarized separately. All non-CAC substance data collected for the 2002 reporting year will be referred to as "NPRI pollutants". The reasons for separating CAC substance data from non-CAC data are as follows:

- The information reported for CAC is limited to releases to air. However, the reports of other pollutants cover releases to all environmental media—air, water and land. They also cover disposal and recycling.
- Reporting separately allows for better comparison to historic NPRI data.
- The information for CAC from point sources for 2002 can be presented along with historic information on area sources to give a more complete picture of overall releases.

There are relatively few CAC, and they have always been discussed individually because each one poses different risks to human health and the environment. NPRI pollutants are sometimes grouped together to reveal trends, but it is not correct to add the CAC to the other NPRI pollutants because many NPRI pollutants are also volatile organic compounds (VOC) and this would lead to double counting. (See *2002 National Overview – Reporting Requirements*, **section 2.9**, for more information on double counting.)

The complete list of CAC and non-CAC data for the 2002 reporting year can be found on the NPRI Web site at **www.ec.gc.ca/npri**.

2. Summary of On-site and Off-site Final Disposal in 2002

In 2002, 3 191 facilities across Canada filed reports on NPRI pollutants. Of these facilities, 1 053 reported on-site and off-site final disposal of NPRI pollutants. That was an increase of approximately 15% from the year 2001. However, some of these changes could have been due to modifications in the reporting requirements. The totals for on-site and off-site final disposals were an estimated 193 376 tonnes and 44 286 tonnes respectively (see **figure 2–1** and **table 2–1**). (See **Appendix A** for changes in reporting requirements and new groupings for releases, disposal and transfers and see **Appendix B** for definitions of off-site disposal and treatment.)

Table 2–1

NATIONAL SUMMARY OF ON-SITE AND OFF-SITE FINAL DISPOSAL IN 2002

Year	2001	2002	Change 2002–2001	% Change 2002–2001
Total facilities	918	1 053	135	15
Number of pollutants reported	124	124	0	0
Total pollutant reports	3 027	3 728	701	23
		Final Disposal (tonnes)		
On-site Disposal				
Landfill	26 486.1	24 390.3	-2 095.8	-7.9
Land treatment	879.8	2 401.8	1 522.0	173.0
Underground injection	161 327.0	167 004.3	5 677.3	3.5
Total	188 692.9	193 796.4	5 103.5	2.7
Off-site Disposal				
Landfill	29 758.3	30 912.2	1 153.9	3.9
Land treatment	2 472.3	2 307.6	-164.7	-6.7
Underground injection	9 083.4	9 010.7	-72.7	-0.8
Storage	2 377.7	2 055.5	-322.1	-13.6
Total	43 691.7	44 286.0	594.4	1.4

Note: Because of rounding of disposal quantities, totals may not equal the sum of the individual values.

For additional information on the facilities and companies that reported to the NPRI for the 2002 reporting year, refer to the supplementary table found on the NPRI Web site at **www.ec.gc.ca/npri**.

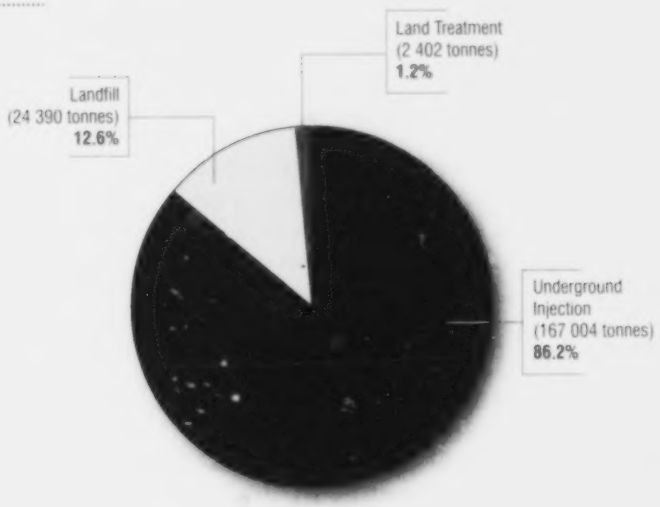
2.1 On-site Final Disposal in 2002

Facilities reported having sent 193 796 tonnes of NPRI pollutants for on-site final disposal in 2002, an increase of 5 104 tonnes (2.7%) from 2001. On-site final disposal can be broken down as follows (see also **figure 2–1**):

- landfill: 24 390 tonnes (12.6% of total on-site disposal), a decrease of an estimated 2 096 tonnes (7.9% of total on-site disposal) from 2001;
- land treatment: 2 402 tonnes (1.2% of total on-site disposal), an increase of 1 522 tonnes (173.0% of total on-site disposal) from 2001; and
- underground injection: 167 004 tonnes (86.2% of total on-site disposal), an increase of 5 677 tonnes (3.5% of total on-site disposal) from 2001.

Figure 2–1

ON-SITE FINAL DISPOSAL IN 2002



The decrease in **on-site final disposal – landfill** was due mainly to two factors:

- a reduction in aluminum oxide by an estimated 760 tonnes (100%) in the Waste Treatment and Disposal sector; and
- a reduction in asbestos by an estimated 460 tonnes (60%) in the Oil and Gas Extraction sector.

The increase in **on-site final disposal – land treatment** had three causes:

- an increase in ammonia of 300 tonnes (34.1%) from the Other Food Manufacturing sector;
- an increase in ammonia of 226 tonnes (35%) from the Meat Products Manufacturing sector; and
- an increase in ethylene glycol of 774 tonnes from the Scheduled Air Transportation sector.

The increase in **on-site final disposal – underground injection** was mainly due to an increase of an estimated 5 603 tonnes (23.86%) of hydrogen sulphide from the Support Activities for Mining and Oil and Gas Extraction sectors.

It is important to note that increases and decreases in the final disposal of pollutants can be attributed to numerous factors including, but not limited to, the following:

- facilities reporting to the NPRI for the first time;
- facilities using improved estimation methodologies;
- changes in facility infrastructure, processes or operations; and
- use of pollution prevention techniques.

These factors should always be considered when NPRI information is being used.

2.1.1 NPRI Pollutants Sent in Largest Quantities for On-site Final Disposal in 2002

In 2002, 25 pollutants accounted for an estimated 99.9% (193 532 tonnes) of total on-site final disposal (see **table 2–2**).

Of these 25 pollutants, the following six accounted for 95.7% of total national on-site final disposals:

- hydrogen sulphide: 155 077 tonnes (80.0%);
- calcium fluoride: 10 252 tonnes (5.3%);
- ammonia (total): 8 740 tonnes (4.5%);
- zinc (and its compounds): 4 569 tonnes (2.4%);
- manganese (and its compounds): 4 065 tonnes (2.1%); and
- methanol: 2 827 tonnes (1.5%).

2.1.2 Industrial Sectors Reporting the Largest On-site Final Disposals in 2002*

In 2002, the following five industrial sectors reported the largest on-site final disposals, accounting for an estimated 181 052 tonnes (93.4%) of on-site final disposals (see table **2–3**):

- Oil and Gas Extraction: 129 316 tonnes (66.7%);
- Support Activities, Mining, Oil and Gas Extraction: 29 170 tonnes (15.1%);
- Alumina and Aluminum Production and Processing: 10 264 tonnes (5.3%);
- Waste Treatment and Disposal: 6 183 tonnes (3.2%); and
- Petroleum and Coal Products Manufacturing: 6 118 tonnes (3.2%).

* For NAICS categories, see **table 2–3**.

Table 2–2

25 NPRI POLLUTANTS SENT IN THE LARGEST QUANTITIES FOR ON-SITE FINAL DISPOSAL IN 2002

		On-site Disposal (tonnes)						
CAS No.	Pollutant	Landfill	Land Treatment	Underground Injection	2002 Total	2001 Total	Change 2002–2001	% Change 2002–2001
7783-06-4	Hydrogen sulphide	0.04	0.00	155 076.99	155 077.02	147 918.43	7 158.59	4.84
7789-75-5	Calcium fluoride	10 252.00	0.00	0.14	10 252.14	10 094.09	158.05	1.57
NA	Ammonia (total)	28.19	1 305.01	7 407.15	8 740.35	7 856.42	883.93	11.25
NA	Zinc (and its compounds)	4 560.74	7.76	0.65	4 569.15	6 234.90	-1 665 75	-26.72
NA	Manganese (and its compounds)	4 017.49	47.15	0.01	4 064.65	2 844.75	1 219.90	42.88
67-56-1	Methanol	12.01	4.00	2 811.01	2 827.02	3 676.79	-849.78	-23.11
NA	Lead (and its compounds)	1 452.27	1.77	0.07	1 454.11	1 490.37	-36.26	-2.43
107-21-1	Ethylene glycol	0.81	773.90	501.70	1 276.41	660.72	615.69	93.18
7440-62-2	Vanadium (except when in an alloy) and its compounds	938.36	2.03	0.01	940.40	705.34	235.07	33.33
NA	Chromium (and its compounds)	869.37	0.26	0.00	869.63	653.24	216.38	33.12
85-44-9	Phthalic anhydride	610.00	0.00	0.00	610.00	402.80	207.20	51.44
1332-21-4	Asbestos (friable form)	518.87	0.00	0.00	518.87	893.01	-374.14	-41.90
NA	Nitrate ion in solution at pH ≥ 6.0	24.42	165.98	279.18	469.57	339.22	130.36	39.43
111-42-2	Diethanolamine (and its salts)	0.00	0.00	350.41	350.41	573.97	-223.56	-38.95
NA	Nickel (and its compounds)	256.62	1.75	0.08	258.45	305.10	-46.65	-15.29
NA	Copper (and its compounds)	195.14	0.00	0.05	195.19	542.16	-346.98	-64.00
108-95-2	Phenol (and its salts)	41.07	0.00	143.39	184.46	118.38	66.07	55.81
91-20-3	Naphthalene	183.98	0.00	0.16	184.14	0.10	184.04	184.04
NA	Cadmium (and its compounds)	150.65	0.12	0.00	150.77	137.40	13.37	9.73
71-43-2	Benzene	0.31	0.00	114.46	114.77	95.50	19.27	20.17
NA	Arsenic (and its compounds)	109.25	0.00	0.00	109.25	135.38	-26.12	-19.29
108-88-3	Toluene	6.12	0.00	100.89	107.02	60.86	46.16	75.85
7664-93-9	Sulphuric acid	0.01	84.29	0.34	84.64	211.25	-126.61	-59.93
1330-20-7	Xylene (mixed isomers)	0.70	2.41	66.33	69.43	107.69	-38.26	-35.53
1314-20-1	Thorium dioxide	54.20	0.00	0.00	54.20	45.05	9.15	20.31
Subtotal of Top 25 pollutants		24 282.6	2 396.4	166 853.0	193 532.1	186 102.9	7 429.14	3.99
National Total		24 390.3	2 401.8	167 004.3	193 796.4	193 447.9	348.54	0.18
% of National Total		100.0	100.0	99.90	99.90	96.20		

Table 2–3

LARGEST ON-SITE FINAL DISPOSALS FOR INDUSTRIAL SECTORS OF NPRI LISTED POLLUTANTS IN 2002

		On-site Disposal (tonnes)						
CAS No.	Pollutant	Landfill	Land Treatment	Underground Injection	2002 Total	2001 Total	Change 2002–2001	% Change 2002–2001
Rank # 1 – NAICS 2111 – Oil and Gas Extraction								
7783-06-4	Hydrogen sulphide	0.00	0.00	125 983.99	125 983.99	124 386.35	1 597.65	1.28
67-56-1	Methanol	0.00	0.00	2 252.49	2 252.49	1 937.30	315.20	16.27
107-21-1	Ethylene glycol	0.00	0.00	425.60	425.60	591.98	-166.38	28.11
111-42-2	Diethanolamine (and its salts)	0.00	0.00	350.41	350.41	573.97	-223.56	-38.95
1332-21-4	Asbestos (friable form)	303.63	0.00	0.00	303.63	763.33	-459.70	-60.22
Total		303.63	0.00	129 012.49	129 316.12	128 252.9	1 063.21	0.82
Rank # 2 – NAICS 2131 – Support Activities for Mining and Oil and Gas Extraction								
7783-06-4	Hydrogen sulphide	0.00	0.00	29 085.30	29 085.30	23 482.70	5 602.60	23.86
67-56-1	Methanol	0.00	0.00	85.05	85.05	337.76	-252.71	74.82
110-54-3	*n*-Hexane	0.00	0.00	0.00	0.00	104.65	-104.65	-100
1330-20-7-100	Xylene (mixed isomers)	0.00	0.00	0.00	0.00	0.00	60.34	-60.34
71-43-2	Benzene	0.00	0.00	0.00	0.00	NR	0.00	NA
64-18-6	Formic acid	0.00	0.00	0.00	0.00	0.00	0.00	NA
67-63-0	Isopropyl alcohol	0.00	0.00	0.00	0.00	NR	0.00	NA
71-36-3	*n*-Butyl alcohol	0.00	0.00	0.00	0.00	NR	0.00	NA
Total		0.00	0.00	29 170.35	29 170.35	23 985.45	5 184.9	17.77
Rank # 3 – NAICS 3313 – Alumina and Aluminum Production and Processing								
7789-75-5	Calcium fluoride	10 252.00	0.00	0.00	10 252.00	10 092.00	160.00	1.56
129-00-0	Pyrene	3.85	0.00	0.00	3.85	13.31	-9.46	-71.01
205-99-2	Benzo(b)fluoranthene	3.79	0.00	0.00	3.79	8.47	-4.68	-55.25
206-44-0	Fluoranthene	2.32	0.00	0.00	2.32	7.98	-5.66	-70.93
56-55-3	Benzo(a)anthracene	1.74	0.00	0.00	1.74	5.06	-3.32	-65.61
192-97-2	Benzo(e)pyrene	0.00	0.00	0.00	0.00	9.27	-9.27	-100.00
Total		10 263.7	0.00	0.00	10 263.7	10 136.09	127.61	1.24
Rank # 4 – NAICS 5622 – Waste Treatment and Disposal								
1344-28-1	Aluminum oxide (fibrous forms)	0.00	0.00	0.00	0.00	759.60	-759.60	-100.00
NA	Chromium (and its compounds)	433.29	0.00	0.00	433.29	276.00	157.29	56.99
NA	Lead (and its compounds)	1 195.12	0.00	0.00	1 195.12	1 186.00	9.12	0.77
NA	Manganese (and its compounds)	976.68	0.00	0.00	976.68	457.40	519.28	113.53
85-44-9	Phthalic anhydride	610.00	0.00	0.00	610.00	402.80	207.2	51.44
NA	Selenium (and its compounds)	0.22	0.00	0.00	0.22	939.80	939.58	-99.97
NA	Zinc (and its compounds)	2 967.90	0.00	0.00	2 967.90	4 170.05	-1 202.15	-28.83
Total		6 183.21	0.00	0.00	6 183.21	8 191.65	-129.28	-2.09
Rank # 5 – NAICS 3241 – Petroleum and Coal Products Manufacturing								
NA	Ammonia (Total)	0.03	0.00	5 731.48	5 731.50	5 534.47	197.03	3.56
67-56-1	Methanol	0.00	0.00	184.27	184.27	187.68	-3.41	-0.02
108-95-2	Phenol (and its salts)	0.02	0.00	143.39	143.41	118.38	25.02	0.21
NA	Zinc (and its compounds)	30.53	0.11	0.23	30.87	3.18	27.69	870.75
108-88-3	Toluene	0.44	0.00	28.01	28.45	22.67	5.78	25.50
107-21-1	Ethylene glycol	0.00	26.04	0.00	26.04	29.70	-3.66	-12.32
7783-06-4	Hydrogen sulphide	0.04	0.00	7.69	7.73	49.38	-41.65	-84.43
Total		31.06	26.15	6 095.07	6 152.27	5 945.46	206.8	3.36

Note: NA – Not applicable; zero – zero values reported; NR – no report submitted.

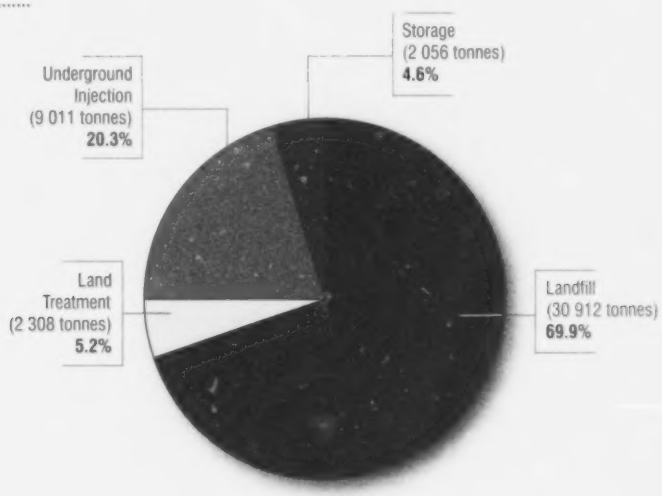
2.2 Off-site Final Disposal in 2002

Facilities reported 44 286 tonnes of NPRI pollutants that were sent for off-site final disposal in 2002, an increase of 594 tonnes (1.4%) from 2001. The types of disposal were as follows (see **figure 2–2**):

- landfill: 30 912 tonnes (69.9%), a increase of 1 154 tonnes (3.9%) from 2001;
- land treatment: 2 308 tonnes (5.2%), a decrease of 165 tonnes (6.7%) from 2001;
- underground injection: 9 011 tonnes (20.3%), a decrease of 73 tonnes (0.8%) from 2001; and
- storage: 2 056 tonnes (4.6%), a decrease of 322 tonnes (13.5%) from 2001.

Figure 2–2

OFF-SITE FINAL DISPOSAL IN 2002



The decrease from **off-site final disposal – landfill** was mainly due to a reduction of an estimated 4 030 tonnes (or 51.2%) of zinc (and its compounds) from the Iron and Steel Mills and Ferro-Alloy Manufacturing sector. The increase from **off-site final disposal – land treatment** was mainly due to an estimated 1 553 tonnes of ammonia (total) reported from the Water, Sewage and Other Systems sector.

As noted earlier, increases and decreases in the final disposal of pollutants can have many causes, including, but not limited to, the following:

- facilities reporting to the NPRI for the first time;
- facilities using improved estimation methods;
- changes in the infrastructure, processes or operation of one or more facilities; and
- use of pollution prevention techniques.

These possible causes should always be considered when NPRI information is being used.

2.2.1 NPRI Pollutants Sent in Largest Quantities for Off-site Final Disposal in 2002

In 2002, 25 NPRI pollutants accounted for an estimated 93.6% (41 447 tonnes) of total off-site final disposals (see **table 2–4**).

Of these 25 NPRI-listed pollutants, the following six accounted for 69.8% of total off-site final disposals:

- zinc (and its compounds): 11 963 tonnes (27.0%);
- sulphuric acid: 5505 tonnes (12.4%);
- manganese (and its compounds): 4 892 tonnes (11.0%);
- calcium fluoride: 4 179 tonnes (9.4%);
- ammonia (total): 2 347 tonnes (5.3%); and
- methanol: 2 041 tonnes (4.6%).

2.2.2 Industrial Sectors Reporting the Largest Off-site Final Disposals in 2002*

In 2002, the following five industrial sectors reported the largest off-site final disposals, accounting for an estimated 25 411 tonnes (57.4% of the total) (see **table 2–5**):

- Iron and Steel Mills and Ferro-Alloy Manufacturing: 9 586 tonnes (21.6%);
- Basic Chemical Manufacturing: 6 038 tonnes (13.6%);
- Alumina and Aluminum Production and Processing: 4 132 tonnes (9.3%);
- Waste Treatment and Disposal: 3 175 tonnes (7.2%); and
- Oil and Gas Extraction: 2 480 tonnes (5.6%).

* For NAICS categories, see **table 2–5**.

Table 2–4

25 NPRI POLLUTANTS IN THE LARGEST QUANTITIES SENT FOR OFF-SITE FINAL DISPOSAL IN 2002

		Off-site Disposal (tonnes)							
CAS No.	Pollutant	Landfill	Storage	Underground Injection	Land Treatment	2002 Total	2001 Total	Change 2002–2001	% Change 2002–2001
NA	Zinc (and its compounds)	11 815.16	347.52	82.40	65.72	11 963.27	10 514.66	1 448.61	13.78
7664-93-9	Sulphuric acid	273.96	16.36	5 231.48	0.00	5 505.44	4 368.17	1 137.27	26.04
NA	Manganese (and its compounds)	4 778.38	315.48	0.00	113.88	4 892.26	4 744.91	147.35	3.11
7789-75-5	Calcium fluoride	4 179.13	0.00	0.00	0.00	4 179.13	4 522.37	-343.24	-7.59
NA	Ammonia (total)	481.45	579.85	74.14	1 791.45	2 347.04	3 034.28	-687.24	-22.65
67-56-1	Methanol	56.12	2.59	1 984.47	0.00	2 040.60	3 130.71	-1 090.11	-34.82
NA	Lead (and its compounds)	1 904.80	174.21	0.10	9.47	1 914.37	1 680.96	233.40	13.88
NA	Copper (and its compounds)	1 577.76	147.03	0.00	25.60	1 603.37	1 097.09	506.28	46.15
1332-21-4	Asbestos (friable form)	1 429.85	0.00	0.00	0.58	1 430.42	1 646.75	-216.33	-13.14
NA	Chromium (and its compounds)	1 098.64	106.85	230.09	0.17	1 328.90	1 556.78	-227.88	-14.64
NA	Nitrate ion in solution at pH ≥ 6.0	72.03	0.00	853.46	147.98	1 073.47	1 018.81	54.66	5.37
7429-90-5	Aluminum (fume or dust)	722.10	1.90	0.00	0.00	722.10	355.43	366.68	103.17
NA	Nickel (and its compounds)	493.45	49.30	18.78	0.00	512.23	725.75	-213.52	-29.42
7697-37-2	Nitric acid	128.24	0.00	183.00	0.00	311.24	147.95	163.29	110.37
1330-20-7	Xylene (mixed isomers)	240.07	61.14	25.11	41.90	307.08	456.61	-149.53	-32.75
108-88-3	Toluene	202.90	49.02	36.52	40.45	279.86	271.07	8.79	3.24
107-21-1	Ethylene glycol	37.26	0.64	172.60	0.00	209.85	135.94	73.91	54.37
NA	Cadmium (and its compounds)	175.20	1.01	0.00	0.61	175.81	154.65	21.16	13.68
108-95-2	Phenol (and its salts)	175.50	0.09	0.00	0.01	175.50	162.00	13.51	8.34
NA	Arsenic (and its compounds)	96.38	13.58	0.00	0.37	96.74	100.56	-3.82	-3.80
7440-62-2	Vanadium (except when in an alloy) and its compounds	95.02	103.17	0.00	0.00	95.02	170.32	-75.30	-44.21
78-93-3	Methyl ethyl ketone	79.48	12.54	4.39	0.00	83.88	82.31	1.57	1.91
NA	Hexavalent chromium compounds	70.41	0.10	0.18	0.43	71.02	NA	71.02	NA
50-00-0	Formaldehyde	70.13	0.09	0.00	0.00	70.13	102.41	-32.28	-31.52
1344-28-1	Aluminum oxide (fibrous forms)	57.77	0.00	0.00	0.00	57.77	81.48	-23.71	-29.10
Sub-total of Top 25 pollutants		30 311.18	1 982.47	8 896.73	2 238.61	41 446.52	40 261.97	1 184.55	2.94
National Total		30 912.23	2 055.54	9 010.65	2 307.61	44 286.02	43 691.65	594.37	1.36
% of National Total		98.06	96.44	98.74	97.01	93.59	92.16		

Note: NA – Not applicable

Table 2–5

INDUSTRIAL SECTORS REPORTING THE LARGEST OFF-SITE FINAL DISPOSALS OF NPRI-LISTED POLLUTANTS IN 2002

		Off-site Disposal (tonnes)							
CAS No.	Pollutant	Landfill	Storage	Underground Injection	Land Treatment	2002 Total	2001 Total	Change 2002–2001	% Change 2002–2001
Rank # 1 NAICS 3311 – Iron and Steel Mills and Ferro-Alloy Manufacturing									
NA	Zinc (and its compounds)	6 552.19	0.00	0.00	0.00	6 552.19	7 410.05	-857.86	-11.58
NA	Manganese (and its compounds)	2 019.28	0.00	0.00	0.00	2 019.28	1 929.51	89.78	4.65
NA	Lead (and its compounds)	653.50	0.00	0.00	0.00	653.50	590.24	63.26	10.72
NA	Chromium (and its compounds)	223.17	0.00	0.00	0.00	223.17	341.73	-118.56	-34.69
1332-21-4	Asbestos (friable form)	137.80	0.00	0.00	0.00	137.80	236.20	-98.40	-41.66
Total		9 585.94	0.00	0.00	0.00	9 585.94	10 507.73	-921.78	-9.62
Rank # 2 NAICS 3251 – Basic Chemical Manufacturing									
7664-93-9	Sulphuric acid	117.43	0.00	5 190.00	0.00	5 307.43	4 120.40	1 187.02	28.81
7697-37-2	Nitric acid	117.00	0.00	183.00	0.00	300.00	120.00	180.00	150.00
1332-21-4	Asbestos (friable form)	193.54	0.00	0.00	0.00	193.54	142.32	51.22	36.69
7789-75-5	Calcium fluoride	180.00	0.00	0.00	0.00	180.00	194.00	-14.00	-7.22
107-21-1	Ethylene glycol	18.77	0.00	37.76	0.00	56.53	40.89	15.64	38.25
Total		626.74	0.00	5 410.76	0.00	6 037.50	4 617.61	1 419.88	246.53
Rank # 3 NAICS 3313 – Alumina and Aluminum Production and Processing									
7789-75-5	Calcium fluoride	3 984.88	0.00	0.00	0.00	3 984.88	4 319.26	-334.38	-7.74
7429-90-5	Aluminum (fume or dust)	105.10	0.00	0.00	0.00	105.10	72.77	32.33	44.43
NA	Zinc (and its compounds)	16.65	0.00	0.00	0.00	16.65	10.69	5.96	55.75
129-00-0	Pyrene	13.11	0.00	0.00	0.00	13.11	26.46	-13.35	-50.39
NA	Copper (and its compounds)	12.71	0.00	0.00	0.00	12.71	7.63	5.08	66.58
205-99-2	Benzo(b)fluoranthene	11.36	0.00	0.00	0.00	11.36	18.89	-7.63	-40.39
206-44-0	Fluoranthene	8.35	0.00	0.00	0.00	8.35	16.19	-7.84	-48.42
Total		4 152.16	0.00	0.00	0.00	4 152.16	4 471.89	-319.83	-7.70
Rank # 4 NAICS 5622 – Waste Treatment and Disposal									
NA	Zinc (and its compounds)	931.55	24.17	74.07	0.00	1 005.62	990.77	14.85	1.50
NA	Nitrate ion in solution at pH ≥ 6.0	60.66	0.00	848.88	0.00	909.54	908.79	0.75	0.08
NA	Chromium (and its compounds)	250.07	32.74	230.09	0.00	480.16	549.34	-69.17	-12.59
NA	Copper (and its compounds)	418.64	6.61	0.00	0.00	418.64	407.83	10.82	2.65
NA	Lead (and its compounds)	361.23	4.82	0.05	0.25	361.53	319.08	42.46	13.31
Total		2 022.15	68.34	1 153.09	0.25	3 175.49	3 175.81	-0.29	-0.01
Rank # 5 NAICS 2111 – Oil and Gas Extraction									
67-56-1	Methanol	8.04	0.00	1 956.54	0.00	1 964.58	3 081.82	-1 117.25	-36.25
1332-21-4	Asbestos (friable form)	318.82	0.00	0.00	0.58	319.40	62.24	257.15	413.16
108-88-3	Toluene	1.27	0.00	28.64	40.36	70.27	77.10	-6.83	-8.86
107-21-1	Ethylene glycol	0.04	0.00	62.81	0.00	62.86	64.48	-1.62	-2.51
1330-20-7	Xylene (mixed isomers)	1.47	0.00	19.92	41.32	62.72	77.06	-14.35	-18.62
Total		329.64	0.00	2 067.91	82.26	2 479.83	3 362.70	-882.90	-35.60

3. Summary of Off-site Transfers for Treatment Prior to Final Disposal in 2002

In 2002, 3 191 facilities across Canada reported disposals of NPRI pollutants. Of those facilities, 831 submitted data on off-site transfers for treatment prior to final disposal. The total of these transfers is estimated at 37 435 tonnes (see **table 3–1**).

Table 3–1

SUMMARY OF OFF-SITE TRANSFERS FOR TREATMENT PRIOR TO FINAL DISPOSAL IN 2002

Year	2001	2002	Change 2002–2001	% Change 2002–2001
Total Facilities	752	831	79.00	10.51
Number of Different Pollutants Reported	149	152	3.00	2.01
Total Number of Pollutant Reports	2305	2 697	392.00	17.00
		(tonnes)		
Physical Treatment	1 902.46	2 359.60	457.14	24.02
Chemical Treatment	12 196.04	8 041.35	-4 154.69	-34.07
Biological Treatment	2 465.66	961.50	-1 504.16	-61.00
Incineration	9 990.15	10 798.10	807.95	8.09
Treatment at Municipal Sewage Treatment Plant	14 060.32	15 274.38	1 214.06	8.63
Total Off-site Treatment	40 614.63	37 434.93	-3 179.70	-7.83

Note: Because of rounding of transfer quantities, totals may not equal the sum of the individual values.

The following breakdown summarizes off-site transfers for treatment prior to final disposal in 2002 (see **figure 3–1**):

- physical treatment: 2 360 tonnes (6.3% of national total off-site treatment), an increase of 457 tonnes (24.0%) from 2001;
- chemical treatment: 8 041 tonnes (21.5% of national total off-site treatment), a decrease of 4 155 tonnes (34.1%) from 2001;
- biological treatment: 962 tonnes (2.6% of national total off-site treatment), a decrease of 1 504 tonnes (61.0%) from 2001;
- incineration: 10 798 tonnes (28.8% of national total off-site treatment), an increase of 808 tonnes (8.1%) from 2001; and
- treatment at municipal sewage treatment plants: 15 274 tonnes (40.8% of national total off-site treatment), an increase of 1 214 tonnes (8.6 %) from 2001.

The increase in physical treatment had three causes*:

- 111 tonnes of xylene (mixed isomers) were transferred off site from the Office Furniture (including fixtures) Manufacturing Industrial sector.
- 79 tonnes of methyl ethyl ketone were transferred off site from the Printing and Related Support Activities sector.
- 40 tonnes of toluene were transferred off site from the Printing and Related Support Activities sector.

The increase in incineration had several causes:

- 440 tonnes of toluene were transferred off site from the Pharmaceutical and Medicine Manufacturing sector.
- 502 tonnes of isopropyl alcohol were transferred off site from the Plastic Products Manufacturing sector.
- 380 tonnes of methanol were transferred off site from the Pharmaceutical and Medicine Manufacturing sector.
- 165 tonnes of *n*-hexane were transferred off site from the Pharmaceutical and Medicine Manufacturing sector.

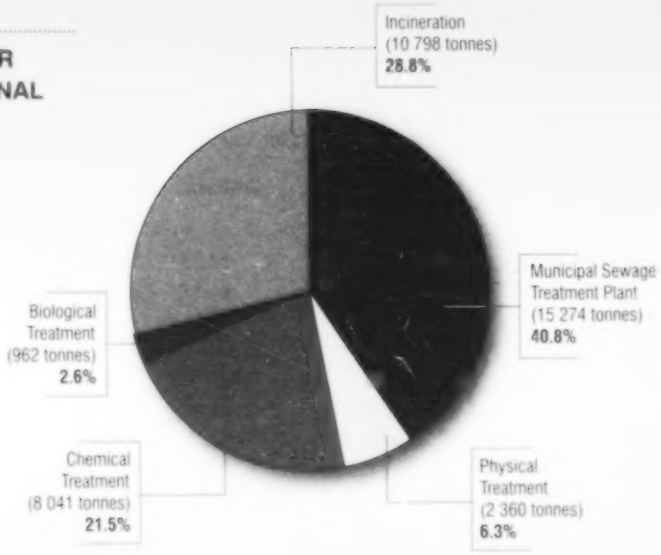
The increase in disposals by municipal sewage treatment plants was attributed to the following:

- 1 065 tonnes of ethylene glycol were transferred off site from the Support Activities for Air Transportation sector.
- 454 tonnes of nitric acid were transferred off site from the Dairy Products Manufacturing sector.
- 260 tonnes of nitrate ion in solution at pH ≥ 6.0 were transferred off site from the Dairy Products Manufacturing sector.

* For NAICS categories, see **table 3–3**.

Figure 3–1

OFF-SITE TRANSFERS FOR TREATMENT PRIOR TO FINAL DISPOSAL IN 2002



3.1 25 NPRI Pollutants Sent in Largest Quantities for Off-site Treatment Prior to Final Disposal in 2002

In 2002, 25 NPRI pollutants accounted for an estimated 93.4% (34 975 tonnes) of total off-site transfers for treatment prior to final disposal.

Of these pollutants, the following six accounted for 21 335 tonnes (57.0%) of total off-site transfers for treatment prior to final disposal:

- nitrate ion in solution (at a pH of 6.0 or greater): 5 307 tonnes (14.2%);
- ethylene glycol: 4 248 tonnes (11.3%);
- methanol: 4 081 tonnes (10.9%);
- hydrochloric acid: 2 936 tonnes (7.8%);
- nitric acid: 2 426 tonnes (6.5%); and
- toluene: 2 337 tonnes (6.2%).

3.2 Industrial Sectors Reporting the Largest Off-site Transfers for Treatment Prior to Final Disposal in 2002

In 2002, the following five industrial sectors reported the largest off-site transfers for treatment prior to final disposal, accounting for an estimated 15 322 tonnes (40.9%) of the total (see **table 3–3**):

- Basic Chemical Manufacturing: 5 937 tonnes (15.9%);
- Support Activities for Air Transportation: 3 054 tonnes (8.2%);
- Other Fabricated Metal Product Manufacturing: 2 637 tonnes (7.0%);
- Other Chemical Product Manufacturing: 1 891 tonnes (5.1%); and
- Iron and Steel Mills and Ferro-Alloy Manufacturing: 1 803 tonnes (4.8%).

Table 3–2

25 NPRI POLLUTANTS TRANSFERRED OFF SITE IN LARGEST QUANTITIES FOR TREATMENT PRIOR TO FINAL DISPOSAL IN 2002

		Off-site Transfers for Treatment Prior to Final Disposal (tonnes)			
CAS No.	**Pollutant**	**Physical**	**Chemical**	**Biological**	**Incineration**
NA	Nitrate ion in solution at pH ≥ 6.0	15.86	74.93	0.20	67.73
107-21-1	Ethylene glycol	51.62	61.33	266.41	458.27
67-56-1	Methanol	149.63	63.01	55.57	1 678.90
7647-01-0	Hydrochloric acid	331.19	1 360.61	0.00	45.13
7697-37-2	Nitric acid	0.00	1 872.13	0.00	23.03
108-88-3	Toluene	98.08	23.42	3.13	2 210.83
NA	Ammonia (total)	22.64	2.75	524.61	14.99
7664-93-9	Sulphuric acid	100.85	1 166.89	0.00	35.56
67-63-0	Isopropyl alcohol	58.03	25.17	2.33	1 455.35
NA	Zinc (and its compounds)	126.85	1 321.81	21.14	115.31
1330-20-7	Xylene (mixed isomers)	190.95	88.53	0.19	986.21
7789-75-5	Calcium fluoride	184.55	959.76	0.00	0.00
78-93-3	Methyl ethyl ketone	116.61	15.49	9.00	544.94
71-36-3	*n*-Butyl alcohol	5.88	8.02	4.12	518.95
110-54-3	*n*-Hexane	30.63	0.40	0.03	448.79
111-76-2	2-Butoxyethanol	14.44	22.47	0.00	62.58
NA	Manganese (and its compounds)	122.62	174.32	10.15	10.61
NA	Chromium (and its compounds)	192.36	47.50	0.01	22.07
100-42-5	Styrene	7.01	5.48	1.21	242.58
NA	Hexavalent chromium compounds	54.06	180.16	0.00	14.48
NA	Nickel (and its compounds)	109.67	114.04	0.96	2.79
108-95-2	Phenol (and its salts)	2.32	7.75	0.52	131.88
50-00-0	Formaldehyde	20.79	8.02	0.21	81.41
NA	Lead (and its compounds)	39.85	137.97	3.25	11.16
111-42-2	Diethanolamine and its salts	56.47	63.57	0.12	4.43
Largest Off-site Disposal		2 102.96	7 805.53	903.15	9 187.96
National total		2 359.60	8 041.35	961.50	10 798.10
% of national total		89.1	97.1	93.9	85.1

Note: NA – Not applicable

MSTP	2002 Total	2001 Total	Change (2002–2001)	% Change (2002–2001)
5 148.06	5 306.77	5 434.50	-127.73	-2.35
3 410.33	4 247.96	4 796.04	-548.08	-11.43
2 134.17	4 081.27	2 939.74	1 141.53	38.83
1 198.95	2 935.87	5 777.71	-2 841.84	-49.19
530.64	2 425.80	1 112.13	1 313.68	118.12
1.68	2 337.14	1 845.57	491.57	26.64
1 401.66	1 966.65	2 246.19	-279.54	-12.45
384.05	1 687.35	3 084.28	-1 396.93	-45.29
140.68	1 681.57	1 311.03	370.54	28.26
29.54	1 614.65	2 379.82	-765.17	-32.15
13.97	1 279.85	1 529.46	-249.61	-16.32
0.00	1 144.30	1 260.87	-116.57	-9.25
38.27	724.31	853.68	-129.37	-15.15
13.91	550.89	345.43	205.45	59.48
0.20	480.06	298.90	181.15	60.61
313.21	412.70	291,07	121.63	41.80
12.37	330.06	481.01	-150.95	-31.38
3.26	265.19	412.21	-147.02	-35.67
0.10	256.38	141.90	114.48	80.68
0.53	249.23	NA	249.23	NA
4.39	231.86	369.61	-137.76	-37.27
74.42	216.89	215.84	1.05	0.47
95.28	205.71	215.84	-10.13	-4.69
2.79	195.01	218.88	-23.87	-10.91
23.40	147.99	376.70	-228.72	-60.72
14 975.85	34 975.45	37 938.41	-2 962.96	-7.81
15 274.38	37 434.93	40 614.63	-3 179.70	7.83
98.0	93.4	93.4		

Table 3–3

INDUSTRIAL SECTORS REPORTING LARGEST OFF-SITE TRANSFERS FOR TREATMENT PRIOR TO FINAL DISPOSAL IN 2002

		Off-site Transfers for Treatment Prior to Final Disposal (tonnes)			
CAS No.	Pollutant	Physical	Chemical	Biological	Incineration
Rank #:1	**NAICS 3251 – Basic Chemical Manufacturing**				
NA	Nitrate ion in solution at pH ≥ 6.0	0.00	0.00	0.00	41.00
67-56-1	Methanol	0.00	2.00	0.00	38.34
7664-93-9	Sulphuric acid	0.00	318.80	0.00	0.00
67-63-0	Isopropyl alcohol	0.00	2.00	2.33	165.00
100-42-5	Styrene	0.00	0.00	0.03	127.01
7697-37-2	Nitric acid	0.00	0.00	0.00	0.00
Total		0.00	322.8	2.36	371.35
Rank #:2	**NAICS 4881 – Support Activities for Air Transportation**				
107-21-1	Ethylene glycol	0.00	0.00	10.90	0.00
75-09-2	Dichloromethane	0.00	2.28	0.00	0.00
NA	Hexavalent chromium compounds	0.00	0.05	0.00	0.00
NA	Cadmium (and its compounds)	0.00	0.04	0.00	0.00
NA	Lead (and its compounds)	0.00	0.00	0.00	0.00
NA	Mercury (and its compounds)	0.00	0.00	0.00	0.00
Total		0.00	2.37	10.90	0.00
Rank #:3	**NAICS 3329 – Other Fabricated Metal Product Manufacturing**				
7697-37-2	Nitric acid	0.00	1 683.69	0.00	0.00
7647-01-0	Hydrochloric acid	0.00	713.42	0.00	0.00
7664-93-9	Sulphuric acid	0.00	136.92	0.00	0.00
NA	Nickel (and its compounds)	0.00	62.27	0.00	0.00
NA	Copper (and its compounds)	0.00	27.62	0.00	0.00
NA	Hexavalent chromium compounds	0.00	39.61	0.00	0.00
Total		0.00	2 663.53	0.00	0.00

MSTP	2002 Total	2001 Total	Change (2002–2001)	% Change (2002–2001)
3 503.00	3 544.00	3 811.00	-267.00	7.01
1 704.43	1 744.77	1 195.38	549.39	45.96
11.56	330.36	482.18	-151.82	-31.49
21.00	190.33	236.01	-45.68	-19.36
0.00	127.04	39.38	87.66	222.60
0.00	0.00	125.96	-125.96	-100.00
5 239.99	5 936.5	5 889.91	46.59	0.78
3 040.94	3 051.84	3 757.98	-706.14	-18.91
0.00	2.28	NV	2.28	NA
0.00	0.05	NA	0.05	NA
0.00	0.04	NV	0.04	NA
0.00	0.00	NV	0.00	NA
0.00	0.00	0.00	0.00	0.00
3 040.94	3 054.21	3 757.98	-703.77	-23.04
0.00	1 683.69	682.72	1 000.97	147.00
0.00	713.42	2 081.02	-1 367.60	-65.72
0.00	136.92	152.26	-15.35	-10.08
0.90	63.17	138.18	-75.00	-54.23
0.00	27.62	55.12	-27.5	-49.89
0.18	39.79	NV	39.79	NA
1.08	2 664.61	3 109.30	-444.69	-16.69

		Off-site Transfers for Treatment Prior to Final Disposal (tonnes)			
CAS No.	**Pollutant**	**Physical**	**Chemical**	**Biological**	**Incineration**
Rank #:4	**NAICS 3259 – Other Chemical Product Manufacturing**				
NA	Ammonia (Total)	1.27	1.52	165.63	0.00
67-56-1	Methanol	6.03	8.24	54.84	275.52
71-36-3	n-Butyl alcohol	3.59	0.00	0.00	475.52
108-88-3	Toluene	2.24	0.32	3.10	517.08
1330-20-7	Xylene (mixed isomers)	7.42	0.00	0.00	275.28
Total		20.55	10.08	223.57	1 543.40
Rank #:5	**NAICS 3311 – Iron and Steel Mills and Ferro-Alloy Manufacturing**				
NA	Ammonia (total)	0.00	0.00	0.00	0.00
7789-75-5	Calcium fluoride	183.30	0.00	0.00	0.00
NA	Chromium (and its compounds)	181.79	13.12	0.00	0.52
NA	Lead (and its compounds)	9.43	69.23	0.00	0.00
NA	Manganese (and its compounds)	102.86	170.46	0.00	0.00
NA	Zinc (and its compounds)	69.86	958.60	0.00	0.00
Total		547.24	1 211.41	0.00	0.52

Note: Zero – zero value reported; NA – not applicable; NV – no value reported

MSTP	2002 Total	2001 Total	Change (2002–2001)	% Change (2002–2001)
52.60	221.03	167.46	53.57	31.99
25.33	369.96	297.72	71.97	24.17
13.91	493.02	268.02	225.00	83.95
1.65	524.39	386.80	137.59	35.57
0.15	282.85	352.40	-69.55	-19.74
93.64	1 891.25	1 472.40	418.58	22.13
120.58	120.58	121.84	-1.26	-1.03
0.00	183.30	190.20	-6.90	-3.63
0.50	195.93	205.13	-9.20	-4.48
0.23	78.89	133.48	-54.59	-40.90
1.07	274.39	431.65	-157.26	-36.43
0.37	1 028.83	1 913.64	-884.81	-46.24
122.75	1 881.92	2 995.94	-1 114.02	-4.43

4. References and Bibliography

4.1 Government of Canada

Environment Canada. *Guide for Reporting to the National Pollutant Release Inventory 2002.* Ottawa: Minister of Public Works and Government Services Canada, 2002.

Environment Canada. *2001 National Overview: Final Disposal and Off-site Transfers for Treatment Prior to Final Disposal: National Pollutant Release Inventory.* Ottawa: Minister of Public Works and Government Services Canada, 2003.

Environment Canada. *2001 National Overview: Highlights: National Pollutant Release Inventory.* Ottawa: Minister of Public Works and Government Services Canada, 2003.

Environment Canada. *2001 National Overview: Recycling and Energy Recovery: National Pollutant Release Inventory.* Ottawa: Minister of Public Works and Government Services Canada, 2003.

Environment Canada. *2001 National Overview: Releases: National Pollutant Release Inventory.* Ottawa: Minister of Public Works and Government Services Canada, 2003.

Environment Canada. *2001 National Overview: Reporting Requirements: National Pollutant Release Inventory.* Ottawa: Minister of Public Works and Government Services Canada, 2003.

Environment Canada. *2001 National Overview: Summary of 2001 Data: National Pollutant Release Inventory.* Ottawa: Minister of Public Works and Government Services Canada, 2003.

Environment Canada. "Notice with Respect to Substances in the National Pollutant Release Inventory for 2002". Extract, *Canada Gazette*, Part I, December 29, 2001.

Environment Canada. "Notice with Respect to Substances in the National Pollutant Release Inventory for 2001 – Amendment." Extract, *Canada Gazette*, Part I, December 29, 2001.

Environment Canada. *Supplementary Guide for Reporting to the National Pollutant Release Inventory – Alternate Thresholds – 2000.* Ottawa, Minister of Public Works and Government Services Canada, 2001.

Canadian Environmental Protection Act, 1999. Statutes of Canada 1999. Chapter 33. Act assented to 14 September 1999.

Statistics Canada. *North American Industry Classification System (NAICS) Canada Manual 1997.* Catalogue 12-501-XPE, Ottawa: Statistics Canada, 1998.

Statistics Canada. *Standard Industrial Classification – 1980.* Catalogue 12-501-E, Ottawa: Statistics Canada, 1989.

4.2 Web Sites for Substance Information

4.2.1 Environment Canada

The Green Lane: **www.ec.gc.ca**

National Pollutant Release Inventory On-line Data Search: **www.ec.gc.ca/npri**

CEPA Environmental Registry: **www.ec.gc.ca/CEPARegistry**

New and Existing Substances: **www.ec.gc.ca/substances**

List of Toxic Substances (Schedule 1 of CEPA 1999): **www.ec.gc.ca/CEPARegistry/subs_list/Toxicupdate.cfm**

Management of Toxic Substances: **www.ec.gc.ca/toxics**

Mercury: **www.ec.gc.ca/mercury**

4.2.2 Health Canada

Existing Substances Division: **www.hc-sc.gc.ca/hecs-sesc/exsd/index.htm**

4.2.3 International Links

Agency for Toxic Substances and Disease Registry (ATSDR): **www.atsdr.cdc.gov**

Chemfinder: **chemfinder.cambridgesoft.com**

Commission for Environmental Cooperation (CEC): **www.cec.org**

Environmental Defense Scorecard: **www.scorecard.org**

International Agency for Research on Cancer (IARC): **www.iarc.fr**

International Programme on Chemical Safety (IPCS): **www.inchem.org**

National Toxicology Program (NTP): **ntp-server.niehs.nih.gov**

Organisation for Economic Co-operation and Development (OECD): **www.oecd.org**

PollutionWatch: **www.pollutionwatch.org**

United Nations Environment Programme (UNEP): **www.unep.org**

World Health Organization: **www.who.int**

4.3 Additional Sources of Information

Agency for Toxic Substances and Disease Registry (ATSDR)
1600 Clifton Road (E29)
Atlanta, GA 30333
U.S.A.
Tel.: (404) 639-6300
Fax: (404) 639-6315
Web site: **www.atsdr.cdc.gov**

Canadian Centre for Occupational Health and Safety
Chemical Evaluation Search and Retrieval System (CESARS)
250 Main Street East
Hamilton, ON L8N 1H6
Tel.: (905) 570-8094
Fax: (905) 572-2206
Web site: **www.ccohs.ca/products/databases/cesars.html**

Commission for Environmental Cooperation (CEC)
393 St. Jacques Street West
Suite 200
Montréal, QC H2Y 1N9
Tel.: (514) 350-4300
Fax: (514) 350-4314
Web site: **www.cec.org**

Health Canada
Publishing Coordinator
Environmental Health Centre
Tunney's Pasture 0801B3
Ottawa, ON K1A 0L2
Tel.: (613) 957-3143
Fax: (613) 941-8632
Web site: **www.hc-sc.gc.ca**

International Agency for Research on Cancer (IARC)
150 cours Albert Thomas
F-69372 Lyon cedex 08
France
Tel.: +33 (0)4 72 73 84 85
Fax: +33 (0)4 72 73 85 75
Web site: **www.iarc.fr**

National Library of Medicine (TOXNET)
8600 Rockville Park, Bldg. 38A
Bethesda, MD 20894
U.S.A.
Tel.: (301) 496-6531
Fax: (301) 480-3537
Web site: **www.nlm.nih.gov/hinfo.html**

Appendix A: Overview of the NPRI

The National Pollutant Release Inventory (NPRI) is at the centre of the Government of Canada's efforts to track toxic substances. It is a legislated inventory of pollutants released to the environment. The NPRI was established in 1992 to provide Canadians information on releases of pollutants from facilities located in their communities, including quantities discharged to air, water, land and underground injection and quantities sent to other facilities for disposal, treatment or recycling and energy recovery. It also supports a number of environmental initiatives, by providing information that:

- helps governments and others to identify priorities for action;
- encourages industry to take proactive measures to reduce releases;
- allows for tracking of progress in reducing releases;
- supports international commitments; and
- provides information to support the development of new control instruments such as codes of practice, regulations and guidelines etc.

The NPRI is a constantly evolving program. Public and stakeholder consultation is an integral part of the changes to the program. Since its inception, substances have been added and deleted, the thresholds at which substances are reported have been adjusted and the scope of the inventory has been expanded to collect data on recycling and pollution prevention activities. Further refinements are planned for future years.

The NPRI program is delivered by Environment Canada under the authority of the *Canadian Environmental Protection Act, 1999* (CEPA 1999). Owners or operators of facilities that manufacture, process, or otherwise use one or more of the NPRI-listed substances under prescribed conditions are required to submit an annual report to Environment Canada on the releases and transfers of those substances.[1] See **Appendix B** for definitions of releases, disposals and transfers.

All non-confidential information collected through the NPRI is available to the public on Environment Canada's Web site in the form of downloadable databases, reports and analyses, and through a query site that allows the user to view information submitted by an individual facility.

For more information, refer to Environment Canada's NPRI Web site at **www.ec.gc.ca/npri** or contact your nearest NPRI office.

What's New for the 2002 NPRI?

The following changes were made to the NPRI for the 2002 reporting year:

Addition of New Substances

- Hexavalent chromium compounds
- Criteria air contaminants (CAC)
  - Carbon monoxide (CO)
  - Oxides of nitrogen (NO_x)
  - Sulphur dioxide (SO_2)
  - Particulate matter (PM)
    - equal to or less than 2.5 microns in diameter ($PM_{2.5}$)
    - equal to or less than 10 microns in diameter (PM_{10})
    - total particulate matter (TPM)
  - Volatile organic compounds (VOCs)

[1] *The requirements for the 2002 NPRI were published in the* Canada Gazette, *Part I, on December 29, 2001.*

Changes in Mass and Concentration Thresholds

- Cadmium (and its compounds): the threshold for reporting based on mass was reduced from 10 tonnes to 5 kg and 0.1% concentration.
- Arsenic (and its compounds), Lead (and its compounds), Hexavalent Chromium and Tetraethyl Lead: the threshold for reporting was based on mass reduced from 10 tonnes to 50 kg and 0.1% concentration.
- Chromium (and its compounds) no longer includes hexavalent chromium.

Changes Where Employee Threshold (20 000 hours) Does Not Apply

- Throughput reduced from 100 to 26 tonnes per year for non-hazardous, solid waste, biomedical and hospital waste incineration.
- Terminal operations (for storage/transfer of crude and refined petroleum products).
- Discharges from wastewater collection systems of 10 000 m^3 or more into surface waters.

Changes to Exemptions for Specific Facilities

- Painting, stripping or rebuilding components for maintenance and repair of transportation vehicles is now included in the NPRI.
- Terminal operations used in the distribution, storage of fuels for retail sale are now included in the NPRI.

Pollution Prevention

- Reporting of pollution prevention activities has been expanded.

Administrative Changes

- Facilities that reported in 2001 must notify Environment Canada if they are not reporting for 2002.

Changes in Definitions

- Facility – now includes pipeline installation.
- Other use – includes use or disposal.

NPRI Substance List for 2002

For the 2002 reporting year, 273 substances were listed on the NPRI, 82 of which were determined to be toxic under the CEPA 1999. There were 241 substances listed with the original 1993 NPRI reporting criteria of 10 tonnes and 1% concentration, excluding by-products. Thirty-two substances were listed with different reporting criteria—mercury, cadmium, arsenic, lead and their compounds, hexavalent chromium compounds, tetraethyl lead, 17 individual polycyclic aromatic hydrocarbons (PAHs), polychlorinated dibenzo-*p*-dioxins/polychlorinated dibenzofurans (dioxins/furans), hexachlorobenzene (HCB), and seven criteria air contaminants (CAC).

The CAC were added to the NPRI for the 2002 reporting year. As a result, the total number of substance reports submitted for the 2002 NPRI almost doubled compared to 2001. Information on CAC is summarized separately from other NPRI substances, which are referred to as "NPRI pollutants".

The total list of NPRI substances for the 2002 reporting year can be found on the NPRI Web site at **www.ec.gc.ca/npri**.

2002 National Overview Series

The 2002 NPRI National Overview (referred to as the "2002 National Overview") consists of the following series of documents:

- 2002 National Overview – Reporting Requirements;
- 2002 National Overview – Summary of Data;
- 2002 National Overview – On-site Releases of NPRI Pollutants;
- 2002 National Overview – Final Disposal and Off-site Transfers for Treatment Prior to Final Disposal; and
- 2002 National Overview – Off-site Transfers for Recycling and Energy Recovery.

The 2002 National Overview Series includes data as they appeared in the NPRI database on December 18, 2003.

In addition to the National Overview Series, Environment Canada has another report entitled *Informing Canadians on Pollution*. This report is a snapshot of pollution from industrial and commercial companies in Canada. In addition to describing progress on sector and pollutant releases and disposal and recycling trends, this report includes special sections on toxic substances, pollution prevention, managing pollution in Canada, and tips on how communities and individuals can use the NPRI.

New Groupings for Releases and Transfers

The following groupings were used to summarize information collected through the NPRI for the 2001 reporting year and continued for the 2002 reporting period:

- On-site Pollutant Releases
  - air
  - water
  - land: includes spills, leaks and other
- Disposal
  - on-site disposal: landfill, land treatment and underground injection
  - off-site disposal: landfill, land treatment, underground injection and storage
  - off-site transfers for treatment prior to final disposal:
    - physical treatment
    - chemical treatment
    - biological treatment
    - incineration or thermal treatment where energy is not recovered
    - treatment at a municipal sewage treatment plant (MSTP)
- Off-site Transfers for Recycling and Energy Recovery
  - recycling
  - energy recovery

As a result of consultations with stakeholders, new groupings were developed for on-site releases. It should be noted that "releases to land" no longer include disposal. The new groupings are different from those found in the *Guide for Reporting to the National Pollutant Release Inventory 2002*. In 2003, these changes were included in the *Guide for Reporting to the National Pollutant Release Inventory 2003* and the software for reporting to the NPRI.

Appendix B: Detailed Data Elements Reported to the NPRI

On-site Releases

An on-site release is a discharge of an NPRI-listed pollutant to the environment, within the physical boundaries of the facility. This includes:

- emissions to air – discharges through a stack, vent, or other point release, losses from storage and handling of materials, fugitive emissions, spills and accidental releases, and other non-point releases;
- releases to surface waters – discharges, spills, and leaks, but not including discharges to municipal wastewater treatment plants (which are reported under off-site transfers for treatment); and
- releases to land – spills, leaks, and other.

Final Disposal Activities – On Site and Off Site

The following activities or operations are included in the category classified as "final disposal" – on site and off site:

- containment – two forms of containment are identified:
  - i) landfill; and
  - ii) other storage;
- underground injection at an off-site location;
- land treatment – for the purpose of land application or land farming; and
- off-site final disposal for storage.

Off-site Transfers for Treatment Prior to Final Disposal

A shipment of an NPRI-listed substance may be transferred to an off-site location for treatment prior to final disposal. The treatment processes include:

- physical treatment (e.g., drying, evaporation, encapsulation or vitrification);
- chemical treatment (e.g., precipitation, stabilization, or neutralization);
- biological treatment (e.g., bio-oxidation);
- incineration or thermal treatment where energy is not recovered; and
- treatment at a municipal sewage treatment plant.

Off-site Transfers for Recycling and Energy Recovery

A shipment of an NPRI-listed substance may be transferred to an off-site location for recycling and energy recovery. "Recycling" refers to activities that keep a material or a component of the material from becoming a waste destined for final disposal. Nine types of recycling operations are identified:

- recovery of solvents;
- recovery of organic substances (other than solvents);
- recovery of metals and metal compounds;
- recovery of inorganic materials (other than metals);
- recovery of acids and bases;
- recovery of catalysts;
- recovery of pollution abatement residues;
- refining or reuse of used oil; and
- other recovery, reuse or recycling activities.

An NPRI substance may be sent for energy recovery when the substance or the material containing it has sufficient energy content (BTU value) to allow its use as an alternative to fossil fuels or other forms of energy.